

# Key Factors Affecting Strategy-Minded Decision Makers in Their Innovations Choices

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**Abstract:** The rapid and continuous pace of technological change is a major challenge for all managers, who are often faced with innovations' adoption decisions affecting the future of their companies. This is a fundamental issue on strategy, if we see strategy as a set of actions to make critical choices between two or more alternatives, in order to achieve competitive advantages or to respond to competitors. Strategy-minded leaders try to predict the value that they will create with their choices in the organization. However, formulating strategy is a difficult task, due to the high level of uncertainty hampering the anticipation of future trends. An even harder work is the implementation of strategy, due to its interdependent relationship with strategy formulation, which is materialized in the organizational structure dedicated to fulfil the organization goals. In this work we propose to look at the factors that strategy-minded leaders perceive that influence the adoption of innovations and we explore their relationships within several academic fields, of study, namely strategic management, organization theory, organization behaviour and organization development, adopting an holistic perspective that will allow for a better understanding of strategic adoption decisions. This analysis is grounded on field work that involved the collection of primary data from different enterprises. The research was based on a quantitative approach and on an intentional non-probabilistic sampling strategy. The sample includes thirty four Portuguese firms, from different sectors. The selection criteria was based on the innovative performance of the firm, and on the concomitant presumption that innovative activities are well structured inside the firm. The sample includes micro, small, medium and large firms. A proportion of the sample includes conglomerates, and in fact, the sample represents approximately one hundred and twenty two firms, and a significant proportion of Portuguese gross expenditure on business R&D. A quantitative structured questionnaire was the main instrument of data collection, but some interviews with selected firms were also realized, in order to substantiate or consolidate some of the data that was obtained through the questionnaire. In this paper we present the preliminary results of the analysis of that data. Investment scheduling and costs appraisal, quantitative and qualitative advantages of the technology and strategic implications of its adoption are the factors that most often influence the decision of innovation adoption and the less common factors include the degree of formalization of decision procedures and the level/extent of the hierarchical chain.

**Keywords:** strategic management, strategy formulation and implementation, innovation, change management, decision making, organizational structure

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## 1. Introduction

In this paper we provide an holistic perspective of the process of decision making regarding technology adoption, considering both strategy formulation and strategy implementation that will allow for a better understanding of strategic adoption decisions backed by relevant empirical data. The main research questions are: What are the factors that most often stimulate firm's to innovate? What are the most important sources of innovation? What are the key elements that affect choices concerning innovation?

The research questions developed out of the perception that the process of innovation adoption was hampered by difficulties related to the process of innovation implementation. We begin this work with a critical review of the existing literature about the concepts related to strategy and innovation, focusing on the strategic management process and in the innovation adoption process. Then we identify the methodology adopted in this work and finally the results are analyzed under the light of the research questions.

## 2. Conceptual framework

Companies are encouraged to make decisions to survive in a hypercompetitive world, with rapid technological change, and the strategic choices that they must do and integrate are related with goals, range of products and services, competitive strategy, appropriate level of coverage and variety, organizational structure, administrative systems and labour policies (Rumelt, Schendel & Teece, 1991).

The survival in the present competitive landscape is assured by large investments, and the consequences of failure are severe, so the successful implementing of strategy is a crucial element of the process.

To Rumelt, Schendel & Teece (1994) strategic management (also called “policy” or “strategy”) is related to the course of an organization, including the issues that are at the heart of top management preoccupations and those who are associated with the reasons why a business succeeds or fails.

Hitt, Ireland & Hoskinsson (2011) state that “the strategic management process is the full set of commitments, decisions, and actions required for a firm to achieve strategic competitiveness and earn above-average returns”, or in other words, it is the successful formulation and implementation of a strategy that creates value.

According to Chaffee (1985), there is no agreement on the literature about the definition of strategy, in spite of the agreement on its existence. Volberda & Elfring (2004) states that its definition and management techniques depends on the researcher’s identification with some particular school of thought.

Strategic management is a discipline that is influenced by various fields of knowledge, namely economics, organization theory, organization behaviour and organization development, where research has been interpreted according to the dominant approach (Hrebiniak & Joyce, 2005).

Those approaches have been classified differently by different authors. The most important classification is the ten schools of thought of Mintzberg (1990), which, according to Volberda & Elfring (2004) provides a better insight about the importance of each one to the area of strategy. Each of these schools has a limited approach, but the whole set provides a comprehensive view of their influence on strategic management. The schools are divided in three classes: (1) the first three schools are “...prescriptive in nature, which are more concerned with how strategies *should* be formulated than with how they necessarily do form”; (2) The following class includes the next six schools, which have a “... focus on specific aspects of the process of strategy formation and are concerned less with prescribing ideal strategic behaviour than with describing how strategies do, in fact, get made.”; (3) the last class includes just one school that integrates the other schools in a unique perspective (Mintzberg, 1990).

Hitt, Ireland and Hoskinsson (2011) argue that the strategic management process has three strategic dimensions: Strategic Inputs, Actions and Outcomes. After a company determines its key competencies, resources and capabilities, based on internal and external environment analysis, it defines its mission and vision statements (Strategic Inputs). Then, in order to achieve profitable results (Strategic Outcomes) it must establish a set of actions, integrating strategy formulation and implementation (Strategic Actions).

Strategy formulation issues are related to competitive rivalry and competitive dynamics, business and corporate level analysis, the international dimension, and cooperative issues and mergers and acquisition strategies, while strategy implementation issues are related with corporate governance, organizational structure and controls, strategic leadership and strategic entrepreneurship.

Firms usually use two models to choose and implement strategies: the I/O (Industrial organization) Model of above Average Returns Model and the Resources Based Model of above Average Returns. The establishment of the basis to strategy is, in the I/O Model, the external environment, while in the Resources Based Model, it is the internal organization (resources and capabilities). Resources are the inputs to production processes and they can be tangible (financial, physical and technological) or intangible (human intellect, innovation and reputation). Capabilities are a set of resources that need to be integrated to fulfil a specific task, and the core competencies are capabilities that serve as a source of competitive advantage for a firm over its rivals (Hitt, Ireland and Hoskinsson, 2011).

However, formulating strategy is a difficult task, due to the high level of uncertainty hampering the anticipation of future trends. An even harder work is the implementation of strategy, due to its interdependent relationship with strategy formulation, which is materialized in the organizational structure dedicated to accomplish the organization goals.

In the literature there is not a clear agreement concerning the dominant framework related to the strategy implementation process. By contrast, on the field of strategic formulation, we can encounter some dominant frameworks, like SWOT and industry structure analysis (Okumus, 2003).

Barney & Arikan (2005) suggests that more work is needed in the strategy implementation field from the perspective of the resource-based theory, as strategy implementation could be a source of sustained competitive advantage on itself, although dependent on other strategic resources controlled by companies that are used in a complementary way.

There is a gap on research concerning the top management process of strategic decision making, and the comprehension of its effects on firm's strategies and operations, which seems to be conducting to difficulties in the implementation of CEOs strategic decision making, and the opportunity to provide them appropriate guidelines ( Priem & Cyocyta, 2005)

Chetty (2010) points that there is a 70 percent rate of failure on executives' efforts to implement strategy, which has a huge cost for organizations. This happens, because they don't have a reliable framework to guide their actions over strategy implementation (Alexander, 1991).

Hrebiniak (2006) argued that managers know little of strategy implementation and they are not trained to implement strategy, only to plan. Another problem is related to the general conviction that strategy implementation plays a minor role on their function, being more adequate for lower levels of management, forgetting that their commitment is essential to a successful implementation. He also argues that the top five obstacles that managers face are: (1) Inability to manage change; (2) Poor or vague strategy; (3) Not having guidelines or a model to guide implementation efforts; (4) Poor or inadequate information sharing; (5) Unclear responsibility and accountability; (6) Working against the organizational power structure.

Strategy and innovation are distinct concepts both in terms of definition and function, being innovation a source of competitive advantage (Dobni, 2010), although Rogers (2003) considers "innovation" and "technology" to be the same thing (Sahin, 2006). The continued growth of the importance of innovation is also related with its capacity to make changes in the competitive position of firms. Thus, innovation and strategy are complementary (Dobni, 2010), and feed on each other.

Innovation begins with signs of changes in the organizational environment. The major challenges faced by institutions are related to the comprehension of the factors that are behind them and to develop appropriate response strategies (Tidd, Bessant & Pavit, 2008.). The selection and adoption of innovation is a fundamental process of strategy implementation.

To Damanpour (1991) "the adoption of innovations is conceived to encompass the generation, development, and implementation of new ideas or behaviours" and is "...generally intended to contribute to the performance or effectiveness of the adopting organization", while "innovation is a means of changing an organization, whether as a response to changes in its internal or external environment or as a pre-emptive action taken to influence an environment".

Since companies have limited resources, and propensity to risk is also limited, they tend not to develop alone all the technologies, and seek alternatives to internal development. To make the decision for one of the alternatives, it is necessary to evaluate them in the context of the company (Gerhard & Voigt, 2009). Hall & Kan (2002) called technology adoption the process of "choice to acquire and use a new invention or innovation".

Rogers (2003) cited by Sahin (2006) and Taalikka (2002), defines adoption as "a decision to make full use of an innovation as the best course of action available". To Chatterjee & Eliashberg (1990) it "involves a deliberate choice decision on the part of the individual" and Taalikka (2002) argues that "a successful adoption and implementation need strong commitment from the managers participating in the adoption process" due to the challenging decisions and resistance from the organizational actors (See & Clemen, 2005).

Literature shows that firms go through a set of phases in innovation adoption, which ranges between four and ten (according to different authors), with specific challenges to managers,. There is a widespread consensus that the earliest stages, namely the *initiation* and *early implementations* stages, are the most critical to innovation adoption. The *initiation stage* implies a formal decision to adopt an innovation and the *early implementation stage*, implies the experimentation of the innovation (Zeldin, Camino & Mook,2005).

Goktan (2005) citing Greve (2003) states that more than create a new innovation, innovation adoption is related to the decision for an individual or organization to establish the use of an existing innovation.

Organizations with mechanistic features tend to be slower, or more resistant, to the adoption of innovations, and organic organizations tend to be earlier adopters or implementers. The functioning and structure of a firm is affected by the adoption of innovations, and the extent of that influence depends on the degree of novelty of the adopted innovations (Damanpour, 1991).

The reasons why firms adopt innovations is connected to the expectation of the development of organizational productivity and performance. However, the decision to adopt does not guarantee its implementation, because there is an organizational challenge to create conditions to its implementation and to fit the innovation to the values of the organization (Klein & Sorra, 1996).

Small companies use preferentially product innovations to achieve competitive advantages, while large firms use other tools, such as economies of scale, learning curve effects, diversification and investment in new projects (Salavou, Baltas and Lioukas, 2004)

Firms that adopted an innovation, have interest in identifying the obstacles that may encounter during the implementation process. In the literature we find strong connections between organizational issues of the adoption of innovation, organizational structure, leadership, market structure, organizational determinants, expectations, and organizational climate and it is suggested that organizational structure is responsible for about 60 per cent on firm's innovation adoption. Research on adoption of one innovation is scattered once there are fewer comparison studies or innovation experiences (Cooper, 1998).

To Nemoto (2010) the most relevant factors influencing the adoption decision are: (1) Organizational characteristics; (2) Influence of employees; (3) Management Model; (4) Profile Manager; (5) Market; (6) Technological Aspects; (7) Competitiveness; (8) Resources; (9) Compatibility with administrative guidelines.

Sultan & Chan (2000) identify factors that influence the adoption of new technologies: (1) Characteristics of subjects; (2) Factors of the Group and company; (3) Perception about the characteristics of the individual technologies.

Despite his importance, companies do not allocate enough time, resources and staff to fulfil the firm's innovation goals, and there is a lack of systematic innovation processes, which seems to reflect firms' short-term orientation focus, while innovation implies a long term approach. Research suggests that major barriers to innovation are related to internal aspects of the organizations, namely the lack of resources, lack of market intelligence, unsuitable corporate culture, poor incentives, and badly defined innovation strategy, unclear responsibilities or badly defined innovation strategy, employees through the absence of market and innovation knowledge (Dobni, 2010).

Dobni (2010), also argued that is necessary to integrate innovation and strategy practices, in order to achieve a better performance.

### **3. Methodology**

The data on which this study relies consists of primary data collected from the Portuguese business sector. The research was based on a quantitative approach and on an intentional non-probabilistic sampling strategy. The sample includes thirty three Portuguese firms, from different sectors. The selection criteria was based on the innovative performance of the firm, and on the concomitant presumption that innovative activities are well structured inside the firm. Thirty four answers were received (17% response rate) and the sample includes five microenterprises, six small companies, twelve medium companies and eleven large companies. A proportion of the sample includes conglomerates, and in fact, the sample represents approximately one hundred and twenty two firms. Although being a non-probabilistic sample, its scope and creditworthiness is important, since, according to official Portuguese R&D statistics (GPEARI, 2011), it represents 27.07% of total Portuguese investment in business R&D. A quantitative structured questionnaire was developed based on key concepts extracted from the scientific literature, on exploratory interviews conducted with some companies, and on the business experience of the researchers, and it was the main instrument of data collection. Some interviews

with selected firms were also realized, in order to substantiate or consolidate some of the data that was obtained through the questionnaire. The extent and depth of the questionnaire limited the number of responses, but it provided a rich set of data. This paper presents only some preliminary results that support our arguments. Work is in progress regarding a detailed statistical analysis, and the formulation of additional explanatory models.

#### **4. Analysis and discussion**

The results presented in this section are related to the inquiry on the factors that drive firms to innovate, the importance of several sources of innovation and factors affecting the adoption of innovation. Those results will be interpreted having in mind strategy issues.

The need to innovate is common to most companies, regardless of size and sector. Companies are driven toward innovation by many signs coming from the organizational environment, internal or external, and it could be a source of competitive advantage the type of sources that firms use in their innovation. Technology evaluation processes enable the formulation of an opinion on what are the best options for technological investment, but in spite of that, managers do not always decide to opt for the best investment. There are several factors that influence the investment decision and they are important to know. Thus, it is possible to design strategies and forms of action for the promotion of technology adoption activity. The decision to adopt or reject an innovation could be explained by the type of needs that more often stimulate organizations to innovate or it can be related to the existence or inexistence of obstacles caused by a particular source of innovation established by strategy.

In this section the aggregated results are presented in a series of tables. All tables present only the five most valued and the five least valued factors. For each table and question there were many more factors whose importance was asked to the respondents.

Table 1 presents the factors that more often stimulate firms to innovate. We found that the three most common are, in descending order of importance, improve the quality of products or services (4.03), increase net sales (3.88) and the satisfaction of a specific request from a client (3.56).

**Table 1:** Factors that more often stimulate firms to innovate

Five most valued factors	Mean (n=34)
Improve the quality of products or service	4,03
Increase net sales	3,88
Increase range of products	3,56
Satisfaction of a specific request from a client	3,53
Improving production processes	3,53
Five least valued factors	
Entering in a new market domestic	3,09
Compliance with legislation	3,09
Reduce environmental damage	2,94
Reduce energy consumption	2,82
Satisfaction of a specific request by a supplier	2,53
1=Never; 2= Rarely; 3=Usually; 4= Very frequently; 5= Always	

The factors that less often encourage companies to innovate are the satisfaction of a specific request by a supplier (2.53), to reduce energy consumption (2.82) and to reduce environmental damage (2.94).

Table 2 presents the importance of innovation sources. We found that the three most important sources are clients (3.85), other departments (3.56) and the internal R&D department (3.47). The less important sources are applications for patents (2.41), technological surveillance (2.74) and acquisition of patents, licenses and know-how (with the same mean 2.74).

**Table 2:** Importance of innovation sources

Five most valued factors	Mean (n=34)
Customers	3,85
Other departments of the company	3,56
Internal department of R&D	3,47
Universities	3,24
Competitors	3,15
Five least valued factors	
Business consulting/Consultants	2,79
Technology transfer organizations	2,76
Acquisition of patents, licenses and know how	2,74
Technological surveillance	2,74
Patent application	2,41
1= Unimportant; 2= Of little importance; 3=Moderately important;4= Important;5=Very important	

Table 3 presents the factors influencing the adoption of innovations. We found that the three most valued factors that are relevant in influencing the decision to adopt the innovation are the definition of terms and costs (4.06), qualitative/quantitative advantages of technology obtained by the company (4.03) and strategic implications (4.00). The least valued factors are age of the decision maker (2.15), the resistance of employees (2.85) and the level/extent of hierarchical structure (2.88).

**Table 3:** Factors influencing the adoption of innovations

Five most valued factors	Mean (n=34)
Definition of terms and costs	4.06
Quantitative or qualitative benefits of technology achieved by the company	4.03
Strategic Implications	4.00
Quantitative or qualitative benefits of technology achieved by customers	3.88
Management support	3.85
Five least valued factors	
Laws that regulating the use of technology	3.03
Working time of the decision maker in the company	2.94
Extension of level or chain hierarchy	2.91
Employees resistance	2.88
Decision maker age	2.18
1=Never; 2= Rarely; 3=Usually; 4= Very frequently; 5= Always	

Referring to table 1, we can see that the main factor that drives companies towards innovation is to improve the quality of products or service. This result is somehow familiar with several studies that highlight the importance of this factor and demystifies the idea that innovation is mostly related to new product development (Sullivan and Dooley, 2010), stressing the importance that companies assign to achieve profits on a short term, an idea that is reinforced by the score attributed to other factors: increase net sales, the range of products and the improvement of production processes. Innovation is realized in an incremental way, in order to increase organizational productivity and performance, where cost reductions assume a principal role. This focus may hamper the innovation process, particularly when a more long term perspective is taken into account in order to compete at a global scale.

Referring to table 2, we can see that the main sources of innovation are the customers. This result is in line with several studies that stress the importance of the interaction of companies with customers, who may be engaged in the idea generation, avoiding, in this way, the uncertainty associated to customer acceptance. This also could reveal the inability that Portuguese companies have to deal with risk and uncertainty. It seems to reflect the hypothesis that Portuguese managers have a high rate of uncertainty avoidance, searching more structured situations, associated with rules, safety and predictability, with a low level of novelty and difference acceptance.

It is also worth mentioning the managers' perception of the importance of technological surveillance as a source of innovation. Despite being considered a key procedure and a best practice in innovation management, managers apparently do not value it. This fact, associated with the importance assigned to customers as the main innovation source, could reveal some lack of commitment from top management and/or the lack of company's competencies or skills concerning innovation strategy implementation efforts.

Analyzing table 3, we can see that the main factors that influence the adoption of innovation are the definition of terms and costs, followed by quantitative or qualitative benefits of technology achieved by the company and strategic implications, which are in line with the strategic actions related to strategy formulation.

It seems that Portuguese companies are driven by a short term perspective, using incremental product innovation to achieve competitive advantages. This may be caused by the lack of human and financial resources regarding the challenges related to the implementation of strategies. Strategy implementation activities have longer timeframes than strategy formulation, involving more people, which increases the complexity of the task. On the other hand, the longer the duration the greater the possibility that competitor's actions change, and that the company adjusts to those changes.

These results could also reveal the difficulties in implementing business-level cooperative strategies, vertical (combination of competencies at different stages) or horizontal (combination of competencies at same stages) business-level complementary alliances, namely through subcontractors or the lack of competencies in project management.

Top managers do not seem to appreciate two important issues of the innovation process, which could be strong inhibitors to the adoption process: employees resistance and the extension of the level or chain hierarchy.

Regarding the extension of the level or chain hierarchy structure and the employees' resistance it seems that formalization and the so-called technostructure dominates the picture. It suggests that firms have a high degree of rules and procedures for managing the behaviour of employees. This issue is a very important one regarding the firm innovation process, because the greater the number of hierarchical levels, the higher is the probability of the emergence of the phenomenon known as 'mentality elevator': the conformation to rules laid down, encouraged by the chain of command, which cherishes more respect for the rules than the results obtained.

The analysis made above may seem odd because it runs counter to some interpretations of related empirical results. The connection to customers is usually interpreted as a positive thing, while in our interpretation it is considered as something that reflects some negative traits. The tendency for incremental product innovation is also viewed as a consequence of specific flaws in the innovative capabilities of firms. The above perspectives are a result of systematic personnel observations of the Portuguese reality made by the authors, and the



realization that the empirical results obtained by structured questionnaires may be interpreted in a different way, when considering the connection between strategy and innovation. We also believe that these interpretations may be eventually applied to realities other than the Portuguese one, particularly at the SME level.

## **5. Conclusion**

In this paper we provide a perspective of the process of decision making regarding technology adoption, considering both strategy formulation and strategy implementation. A key finding or interpretation of this research was the realization that companies seem to be mostly concerned with short term profits, rather than creating long-term value. The lack of resources, namely financial and human resources, could explain the managers focus on short-term profits. The rate of innovation failures is high, with high costs to firms and it is related to implementation matters. To face those constraints, it seems that a Portuguese manager prefers product innovations as the pathway to achieve competitive advantages in an incremental way. This focus could lead managers to take harmful decisions to the future of business, namely in the establishment of mechanistic organizational structures where communication is done in a formal way through hierarchies with a high level of chain extension command, where power and authority are based in the seniority and the responsibilities are rigid.

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